

A Restoration Agenda for the Corps and Opportunities  
For Partnership with Environmental Defense

James T. B. Tripp, General Counsel

Environmental Defense

257 Park Avenue South

New York, N.Y. 10010

[jtripp@environmentaldefense.org](mailto:jtripp@environmentaldefense.org)

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**Introduction.** Each century, the Army Corps faces new challenges. In the 18th century, the Corps helped grant America her independence. In the 19th century, the Corps helped open the American West by making our major rivers navigable. In the 20th century, the Corps helped the nation recover from economic depression, win two world wars, protect our cities from floods, build a modern waterway system, and fill our homes and businesses with power.

Every time America faced a challenge, the Army Corps rose to meet it. But now, there is a new challenge.

Harnessing our rivers, lakes, bays, and coastlines to meet human needs has dramatically reduced the biological diversity and productivity of these natural resources. By building dams, we destroyed islands, wetlands and side channels and disrupted reproductive cues; By building levees, we cut off rivers from floodplain spawning grounds and blocked the transfer of organic matter; By building groins and jetties, we interfered with the natural movement of sand along the coast.

In sum, Army Corps projects that have served the nation by reducing flooding, providing waterways, and generating power have also dramatically altered the natural hydrologic and geologic processes that once characterized these natural systems -- processes upon which thousands of species depend upon for their survival. This is most evident in the case of the Mississippi River, by far North America's largest River Basin. However, these problems are not confined to the Mississippi. All of America's working rivers -- the Ohio, Missouri, Sacramento, Columbia, Susquehanna, Rio Grande -- all of these national treasures have been altered to meet human needs. And, all are experiencing serious environmental problems as a result.

That is not the only fate these rivers share. Like most of America's working rivers, the fate of these rivers is largely in the hands of you, the Army Corps. This is the new challenge the Corps faces: to ensure that these working rivers remain living rivers as well. Only the Corps has the jurisdiction, resources, political clout and expertise to meet this challenge.

To meet this challenge, we believe the Corps must embrace a simple idea: that all Corps projects should restore and, as importantly, protect hydrologic and geomorphic functions and values. We are all aware that the primary goal of Everglades restoration is to "get the water right." We believe this simple principle should apply to all Corps

projects -- all Corps restoration projects, all Corps mitigation projects, and all Corps civil works projects. In other words, the Corps should adopt environmental restoration as its primary mission. The question is what this means and how to make it happen. Insofar as this happens, national environmental groups like Environmental Defense will become key constituents of the Corps.

**Background information on my involvement with the Corps since 1973.** On a personal note, I have been a lawyer for Environmental Defense for almost 30 years, having started in the spring of 1973 and having served as an Assistant U.S. Attorney in the Southern District of New York during the preceding five years. During the first half of my EnvDef career I was deeply engaged with the Corps of Engineers, in litigation fighting individual Corps navigation, agricultural drainage and flood control projects, particularly in the Gulf coast and Lower Mississippi Valley states, and seeking an expansion of the scope of the Clean Water Act Section 404 program. Reform of federal cost sharing principles that contributed to local support for Corps projects that were environmentally undesirable was another major effort.

The very first case in which I personally became involved concerned the Corps' Truman Dam project in Missouri. We were unsuccessful, but I learned a lot about the impact of Mississippi River tributary dam projects. In coastal Louisiana, we were parties to litigation challenging the Corps Atchafalaya River and Bayous Chene Boeuf and Black navigation project and the Lake Pontchartrain Hurricane Protection Project in the 1970's. The latter was not built. While the former was constructed, the Corps radically changed its plan for the disposal of dredged material from use of 8000 acres of wetlands to placing material in Avoca Lake, a failed forced drainage agricultural area. I was involved in the challenge to the Cache River agricultural drainage project in eastern Arkansas, spoke at the 404 hearing on the project in or about May 1976 and served as a member of EPA's task force to devise an alternative flood management program. While the Eighth Circuit ultimately found that project's EIS to be satisfactory, the channelization of the Middle and Lower Basins of the Cache River did not proceed; instead, a wonderful National Wildlife Refuge protects that riverine wetland ecosystem. I testified against the Yazoo Pump project as then planned in the late 1970's at a hearing in Mississippi. I was involved in state adjudicatory hearings in Tennessee concerning the Obion Forked Deer agricultural channelization project. I also represented EnvDef in the second round of federal court litigation over the Tennessee Tombigbee navigation project, a disastrous environmental project, and the decision not to pursue that NEPA challenge after the Southern Railroad pulled out remains the most difficult decision and low point of my EnvDef career.

As I began my EnvDef career, the Corps was struggling with the initial implementation of the CWA Section 404 program. My first major 404 matter involved the proposal by the Deltona Corporation to construct second homes along finger-fill canals by dredging and filling and thus destroying mangrove swamps. The Corps courageously denied two of the three requested permits in April 1976, thus saving most of those mangroves, finding that Deltona's "waterfront" housing was not water-dependent since the general purpose of housing did not require proximity to water. This

action was upheld in both federal district court where we intervened on behalf of the Corps and in the U.S. Court of Claims. All of the Deltona litigation ended with a settlement agreement in June 1982 that, among other things, included Deltona's deeding over to the State of Florida 15,000 acres of mangrove wetlands that are now preserved. In the fall of 1978 with several local groups, we initiated the Avoyelles Sportsmen's League case in the Northern District of Louisiana to stop the destruction of 20,000 acres of forested wetlands in the Red River backwater area. Agricultural clearing and drainage, supported by Corps and SCS projects, by then had resulted in the conversion of over 80% of the 25 million acres of floodplain bottomland hardwood wetlands in the Lower Mississippi Basin. That case led to a much-improved methodology for delineation of such wetlands and regulation of many agricultural conversion activities. Finally, I was active in litigation against the Corps in the early 1980's challenging some of the provisions of then proposed Section 404 regulations and helped to negotiate the settlement of that case, including language for nation-wide permit 26.

I provide detail about this part of my EnvDef career because these experiences serve as the basis for much of my thinking about the role of the Corps today, and the current leadership of the Corps that knows about my involvement with Mississippi Delta restoration efforts has no first-hand knowledge of this experience. It seemed to me then that the Corps was a remarkably talented agency, the premier federal engineering agency, that was wasting and misusing much of that talent in pursuit of projects that made no environmental and little economic sense. While Corps district engineers and planners typically stated in conversations that they merely did what Congress asked them to do, that position lacked credibility. The Corps has always been too powerful, too talented and too proud not to share significantly in the responsibility for its actions.

**Personal involvement with Mississippi Delta restoration initiatives.** Fifteen years ago, as we intervened in the first Everglades case brought by the United States against the SWFWMD over phosphorus discharges from the Everglades Agricultural Area, and Tim Searchinger joined our staff, my work agenda shifted. Since that time, my major involvement with the Corps has been in three areas, one in the Lower Mississippi Basin, namely, coastal Louisiana and the other two in the NY metropolitan region, the Lower Hudson-Raritan Estuary where I co-chair the Dredged Material Management Integration Work Group (DMMIWG) of the Harbor Estuary Program and Fire Island where I am a member of the Corps' non-structural technical advisory committee. In both the coastal Louisiana/Mississippi Delta and the New York Harbor work, environmental restoration is an important part of the Corps' mission. Restoration of the Mississippi Delta has been a moral imperative for me since my first trip to Louisiana in early 1974.

At that time, the first study of coastal land loss, by Sherwood Gagliano, PhD, and David Chatry, Director of Planning for the New Orleans District, had just appeared. They estimated the annual rate of land loss to be 16.5 square miles of wetlands. This struck me as being terribly wrong. Subsequent analyses by Gagliano, the U.S. Fish and Wildlife Service and others showed the rate of loss to be accelerating. In 1979-80 with many of my colleagues, I worked with the State in shaping its first coastal wetland permitting program as part of its Coastal Zone Management program, formally approved

in late 1980. This state program, together with the Corps 404 program, has altered the design, length and number of new oil and gas equipment and pipeline canals, and coastal land loss due to construction of new canals has diminished since the mid-1980's.

In February 1986, I helped to convene the first meeting of what a year later became the Coalition to Restore Coastal Louisiana. At our invitation, General Tommy Sands, then LMV Division General, attended part of that meeting to discuss his initiative for an NOD study of the feasibility of a large-scale sediment diversion near to the mouth of the Mississippi River. In April 1987 the Coalition released its first report, Here Today and Gone Tomorrow, A Citizens' Call to Action for Coastal Restoration, in draft form. Two years later it was released in final form. This was the first comprehensive proposal for a joint State, federal and citizens' restoration program for the Mississippi Delta. Shortly thereafter the State approved a Coastal Restoration Trust Fund. Three years later, the Congress approved the Breaux Act. In 1998, recognizing the limitations of that Act, the State, through a number of highly respected scientists released Coast 2050 and the Coalition, under the aegis of its extraordinarily able executive director Mark Davis, published No Time to Lose, the first useful assessment of the economic consequences for the nation of continued loss of 25 to 30 square miles per year of wetlands for Mississippi River navigation, the coastal and off-shore energy industry and Gulf fisheries. At Governor Foster's Coastal Summit on August 15, 2001, at which Governor Foster and Whitney National Bank President King Milling called for a comprehensive program for coastal restoration as a State and national imperative, I urged that the Corps and the national environmental community, led by Environmental Defense and the National Wildlife Federation, build trust by pursuing Delta restoration as a large-scale environmental restoration demonstration project. I served on Governor Foster's temporary Commission on the Future of Coastal Louisiana, chaired by King Milling, that presented its report to the Governor on February 28 of this year. I now serve on the Framework Development Committee for Delta restoration.

**The Corps' environmental restoration challenge.** At times in the past the Corps thought big. This was the case during the period of the Eads-Humphreys debates about Mississippi River navigation and flood control in the last decades of the 19<sup>th</sup> century. It was also the case after the historic floods of 1927 with the congressional authorization for the Mississippi River & Tributaries project. The "taming" of the Mississippi River has been a colossal and bold engineering undertaking, but with enormous, largely unforeseen, ecological consequences stemming from the severing of the River from its floodplain wetlands and depriving the Delta of sediment.

It is time for the Corps to think big again about environmental restoration and restoring of ecological services in major river systems, including the Mississippi Basin. How do we retrofit lock and dam, channelization, tributary dam and levee projects that were designed typically to serve navigation, agricultural drainage and/or flood control purposes to meet ecological goals as well? Retrofitting these traditional projects to meet basic riverine, vegetated flood plain and estuarine ecological goals as well is a mega-engineering and scientific challenge. If the Corps rises to this challenge and figures out how to do it well, we very much want the Corps to have the resources.

We need to have a common understanding as to what environmental restoration is. First and foremost, restoration means restoring hydrological and geomorphological processes or replicating those processes. Traditional Corps projects have not just degraded specific wetlands, rivers or estuaries. They have dramatically altered riverine, estuarine and wetland system natural processes. Restoration entails doing what is feasible to re-establish or replicate those natural processes. While moving dredged material around to create a substrate for a specific piece of wetlands might improve ecological function of a particular system, it is not ecologically useful restoration if the basic hydrologic and sediment processes that led to loss of that wetland remain untouched. The Corps tends to get much more excited about using dredged materials to rebuild specific wetlands, by way of example, than environmentalists do, not because rebuilding a specific wetland tract may not be environmentally meritorious, but because such projects are not using natural processes or are not seeking to re-establish such processes.

Another example of how we may mean quite different things by “restoration” is seen in our oft-different approaches to management of barrier islands. For an environmentalist, the construction of a groin field to retain a particular configuration of a barrier island is direct interference with natural flows of coastal water and sediment. The Corps, to its credit, increasingly recognizes this. However, the Corps sees beach “nourishment” or shoreline “protection” projects as techniques for rebuilding eroding barrier islands and thus making them more as they were at some point in the past when people began building structures on them. For an environmentalist, taking sand from some off-shore point and putting it on a beach to build a new berm or rebuild an eroding beach is often interference with natural littoral processes of erosion and deposition that will only encourage people to live in high hazard coastal areas.

Further, since the core of restoration is restoration of river, flood plain or estuarine water and sediment flows, i.e., hydrology, the Corps will have to be as open as possible with its hydrologic data and models. For example, the challenge in the Everglades is getting water flows and the timing of those flows to be as close to natural flows as is feasible. Hydrology and geomorphology are tough sciences. The Corps sometimes acts as though it has or should have a monopoly on these sciences, and it often appears to take umbrage when it is questioned about such data and models, less so, by contrast, when it comes to biology. Building a partnership of trust in pursuit of an environmental restoration agenda will require that all partners have a common understanding of hydrologic data and analytic tools. For our part, Environmental Defense or other environmental organizations will have to invest in professional staff with expertise in hydrology, geomorphology and hydraulics, as well as ecology and economics. We want to be sure that the Corps’ hydrologic and environmental science is sound, preferably at appropriate times subject to independent scientific reviews.

Since re-establishing natural processes where hydrologic modifications have been severe and retrofitting projects to meet ecological goals, as well as traditional missions, is such a challenge, the Corps should also invest significantly in research and development

focused on how we do restoration, i.e., move water and sediment around to restore geomorphological processes. The Corps' best scientists at WES should lead these R & D efforts, and the Corps should greatly expand its commitment to this kind of R & D. These scientists should also be involved in major restoration efforts, such as the Everglades, the Mississippi Delta and other restoration projects in the Mississippi Basin, and the Corps' traditional planning model with district plans reviewed by Division and then Headquarter personnel may have to be altered with a team of nationally prominent Corps scientists with cutting-edge R & D expertise and experience playing central roles in devising large-scale restoration plans.

Furthermore, where the Corps is pursuing a traditional navigation or flood control project, it must do far better in terms of economic analyses and mitigation. The Corps must use nationally respected economic models to restore credibility to Corps economic analyses. Corps economic forecasts have been a severe problem for decades. I encountered these analyses and models in connection with the Tennessee Tombigbee Waterway and Red River Waterway projects. The TennTom forecasts struck me as bizarre, with all this steam coal destined for Japan in a federally subsidized waterway that would allow Japan to make steel for export back to the U.S. that much more cheaply. In addition, there was so little thought as to what different future energy scenarios for all fossil fuels might mean for these forecasts. It would be useful for the Corps to undertake a honest critique of economic models used to forecast these navigation projects, as well as those for the White and Missouri Rivers. Corps mitigation projects suffer from similar defects. Within the environmental community, and certainly at Environmental Defense, there is little confidence in mitigation methodologies.

Finally, in terms of defining an environmental agenda for the Corps with broad based partnerships in the environmental community, such as Environmental Defense, at both the district and broader regional or national level, a question is the relationship between restoration projects and non-restoration, traditional kinds of projects or a restoration agenda and traditional agenda. If, within the same district and same ecosystem, the Corps, from our point of view, is pursuing both a legitimate restoration project and a traditional project that will result in the loss of hundreds or thousands of acres of wetlands with dubious mitigation, can we selectively support the one and oppose the other? Is a productive partnership possible under such circumstances?

Does the Corps view environmental restoration projects as one more set of projects, like navigation, flood control and agricultural drainage projects, that bring work and expand budgets? Alternatively, as and if the Corps makes a larger institutional commitment to environmental restoration, will it be more prepared to step back from a project that is too destructive environmentally and make sure that every project is evaluated in a large ecosystem restoration context where every opportunity to use natural processes in the service of multiple objectives is pursued? Is it that the Corps is looking to the national environmental community to be one more constituent for a new and growing set of projects to add onto its traditional constituents of navigation, flood control and agricultural interest? Or is the Corps considering a whole new orientation with ecosystem restoration at its core with the thought that a partnership with Environmental Defense and others is critical if this is to find political traction? Part of this latter kind of

thinking should be an ethic to do no harm, as Scott Faber in our D.C. office puts it – a willingness on the part of the Corps to exhaust every option before proceeding with a project that will do real ecological damage.

As we look at the Corps' current agenda with, for the first time, some serious efforts at large-scale environmental restoration, all of these questions come to the fore. To see how these issues may play out and interrelate, let's look at a number of projects that the Corps has underway in the Mississippi Basin.

**The Mississippi Basin – restoration and traditional missions.** The Corps and Environmental Defense are engaged, either cooperatively or in battle gear, over a number of projects in the Mississippi Basin. These include Delta restoration in coastal Louisiana, the Yazoo Pump project in Mississippi, the New Madrid floodway project in southeastern Missouri, expansion of locks on the Upper Mississippi River, pool planning in the most northerly reaches of the Upper Mississippi River and Lower Missouri River restoration. As we look at these projects and their inter-relationships, we should bear in mind the questions raised above. What do we mean by restoration? Is Corps hydrology transparent? Are economic models credible? What is the relationship among these various projects in terms of defining Corps missions and priorities and what this may mean for any future partnership with Environmental Defense and other national environmental organizations?

**Delta restoration initiatives.** Restoration of the Mississippi Delta is a mind-boggling engineering, scientific, legal and political challenge. The Delta, four million acres of wetlands in size 100 years ago, has lost one million acres since then, with best estimates that the rate of loss continues at some 20,000 acres of wetlands per year. Much of this degradation is due to the Corps management of the River in southern Louisiana, with flood control and navigation levees, the latter butting into the Gulf, depriving the Deltaic plain of sediment inputs and thus contributing to sediment starvation and coastal subsidence. This reflects the MR & T authorization that encompasses navigation and riverine flood control but is silent about coastal flooding that could result from coastal subsidence. In addition, tributary dams trap sediments that under natural conditions would have contributed to land building in coastal Louisiana. The State's Coast 2050 plan, prepared with help from all of the Breaux Act agencies, including the Corps, estimated the cost of Delta restoration to be \$14 billion, an enormous sum.

Within the last 18 months, much has happened to project Delta restoration forward, with the Governor's commitment at his Coastal Summit in August 2001, his establishment of the temporary Committee on the Future of Coastal Louisiana, the pending creation of a State Commission and the creation of the Framework Development Committee and National Technical Review Committee. The Corps and the State have begun working well together, Corps headquarters is engaged, excellent academic scientists are sitting at the FDC and NTRC tables and the process has been remarkably open marked by candid discussion. Both Corps and State officials have been very open to me as a representative of Environmental Defense. The Corps has come to recognize,

indeed, that continued coastal subsidence could threaten its traditional navigation and flood control responsibilities.

A primary question that the temporary Committee and now the FDC has been debating is: what do we mean by restoration? In July 2001 members of the NOD Planning Staff gave a briefing for staffers from Environmental Defense and the National Wildlife Federation in D.C. Clearly much thinking had gone into this planning task. However, the two first projects that the Corps then proposed to move towards construction as part of this restoration initiative were creating wetlands in proximity to Highway 1, with the source of that sediment unclear, and dredging millions of cubic yards of sand off-shore, at an estimated cost of \$6 billion, to rebuild Louisiana's barrier islands or off-shore Deltaic fragments. The more complex sediment diversion projects were way back in terms of their planning status. My colleagues at that briefing expressed concern about this prioritization arrangement, and we have continued to express these concerns since that time. Borrowing sediment from some location to create substrate for wetlands where wetlands have eroded or rebuild Louisiana's barrier islands could contribute to Deltaic restoration, but they do not go to the core of the problem. These projects are dealing with places, not processes.

The projects that could contribute to restoration by replicating natural processes of sediment and water overflow and distribution are major sediment diversion projects. While the Corps has now built two fresh water diversion projects, it has not yet designed or built a large sediment diversion project, with one exception (depending on one's concept for such a project), the Old River Control Project that was not designed to distribute water and sediment for ecological, land-building purposes. In my view, the siting, design and impact assessment of major sediment diversion projects should be the highest priority because they are the most important in terms of using Riverine processes to rebuild wetlands and because they are the most challenging.

Any major diversion project will raise questions about impacts on navigation, coastal communities and wetlands. Many members of the FDC have urged a fresh look at changing the operation of the Old River Control structure to provide more sediment for coastal processes; some have proposed looking at ways to deliver Atchafalaya River water and sediment, now confined between the west and east guide levees, to the Lake Verret Basin to the east through east guide levee structures. These proposals find ready resistance within the Corps. A major diversion project at or close to LaFourche Bayou would either have significant impacts on coastal communities if the Bayou itself were selected for this task, forcing relocations, or wetlands if a parallel structure were pursued. While we are discussing these challenges through the FDC and other forums, we have to recognize candidly that, unless and until we can solve the challenge of large-scale diversions, the whole idea of Delta restoration remains in doubt. For the environmental community, sediment diversion, i.e., restoring some semblance of historic sediment processes, is the guts of restoration, not digging borrow pits to create wetlands or rebuilding barrier islands as static places. Over reliance on such traditional methods of creating wetlands or nourishing barrier islands raises questions about what the Corps really means by restoration.



Planning a comprehensive sediment diversion program for Delta restoration is a complex technical task that has no precedent anywhere in the world, and certainly none in the U.S. While excellent members of the NOD planning staff and many Louisiana and nationally known scientists are involved in this planning undertaking, a question is whether the best scientific thinkers from WES are committed to this task. If they are, they are not in evidence. They are very much needed. Developing a comprehensive sediment diversion program as a key element of coastal restoration will require the involvement of the best scientists nationally available at the Corps and our nation's universities and consulting firms.

While the Corps has been proceeding with restoration planning through its coastal restoration feasibility study, the FDC and other processes, the NOD, the LMV and Headquarters have been proceeding with planning for and seeking authorization for traditional, single-purpose navigation and storm protection projects within the Deltaic plain. Two examples are the \$630 million Morganza to the Gulf Hurricane Protection project which is one of several projects that together are attempting to create a kind of Maginot line of levees all across the Delta close to the Gulf and the proposed further expansion of the Bayous Chene Boeuf and Black navigation project designed to support industries manufacturers of OCS rigs and other off-shore oil and gas equipment. There may be good reasons to design and construct such projects since Louisiana's coastal zone is a working landscape laced with numerous small communities. However, both projects will result in further wetland loss. The estimate loss of wetlands involved in constructing the Morganza to the Gulf project is just over 4000 acres, mostly as borrow pits for material for levee construction.

As far as we can determine, the Corps has not asked during the planning of these projects: how could we design these projects to maximize opportunities for restoration, i.e., achieving two purposes rather than just one? Indeed, over the last year, the NOD has acted as though planning for these kinds of traditional mission projects could proceed independently, on a separate tract, from restoration planning. While during the time when the Corps was actively planning these projects, planning for comprehensive restoration was at only very initial stages, for Environmental Defense and other national environmental organizations, that is not a satisfactory response. The question is what is or could be the relationship between traditional and restoration planning and projects, and shouldn't traditional, single-purpose projects, given their cost and impact, be rethought within the overarching framework of comprehensive Delta restoration planning and implementation? Thus, from our point of view, a meaningful partnership of trust between the Corps and Environmental Defense must include a willingness to look at these kinds of projects within this larger restoration framework where in 2004 we will jointly be asking the Congress, the President and the people of the U.S. to support a restoration program with a cost of \$14 billion or more.

**Mississippi Basin projects north of the Delta.** Just as we have to be prepared to ask questions about the juxtaposition of restoration and traditional projects within coastal Louisiana, building a partnership may require facing up to conflicts and

challenges elsewhere in the Basin. While we could attempt to isolate our working together with the State on Delta restoration from projects elsewhere in the Mississippi Basin on the ground that demonstrating a partnership on such a visible and important effort could be a building stone to expanded efforts elsewhere, proceeding with business as usual in other parts of the Basin could give the impression that the Corps is primarily interested in restoration only when the environmental community is willing to seek massive dollars for Corps work; otherwise, it will seek budgetary support by pursuing other constituencies. If we are not careful, this could undermine the kind of partnership that we jointly must have with each other and the State of Louisiana to achieve the goal of Delta restoration.

Let us look at three other traditional, single-purpose projects: the Yazoo Pump project, the New Madrid floodway project and the Upper Mississippi lock expansion proposal. In addition, the Corps has devised a vision of an ecological system for the pools in the most northern reaches of the Upper Mississippi River; the challenge there, however, is to figure how to do the engineering to use water and sediment to create these conditions. Challenges also exist over how to change the operation of Lower Missouri River dams to improve ecological conditions and, beyond that, how to restore that River.

The Yazoo Pump project and the New Madrid Levee project are both environmentally disastrous projects that will severely alter hydrologic processes. If the Corps is serious about pursuing an environmental restoration agenda that looks beyond specific projects in partnership with groups such as Environmental Defense, then it has to consider starting with the premise that further harm to Mississippi River backwater areas and floodplain areas that still are connected to the River should be avoided. A restoration agenda would look at ways to expand forested wetland areas in overflow, backwater areas of the Basin and to expand portions of the floodplain of the River that are connected to the River allowing for periodic backwater flooding.

The primary purpose of the Yazoo Pump project is to drain additional acres of forested or potentially forested bottomland hardwood wetlands so that agricultural production can be expanded. That project would not be necessary if those portions of the Yazoo Basin that are too wet for farming due to natural topography or the effects of backwater or headwater levees would remain naturally forested. It might entail an expansion of forested areas, a net restoration effect, with purchase of flood easements. The New Madrid Levee would disconnect the Mississippi River from 75,000 acres of seasonally adjusted flooded wetlands in what is perhaps the only stretch of the River below St. Louis and Cairo where its floodplain has not been severed. This project is particularly egregious from our point of view since a less costly and less environmentally destructive alternative is available, to wit, building a smaller levee along a tributary to the Mississippi River and upgrading the stormwater management system of East Prairie. A broader restoration agenda, indeed, would look at ways of rerouting the River's levees further back from the River around agriculturally marginal lands that could then revert to forested floodplain wetlands connected to the River.

The disagreement between the Corps and Environmental Defense over the proposed expansion of the locks of the Upper Mississippi River has been particularly contentious and public. We continue to have serious questions about the economic forecasts models that the Corps is using and operation of these pools. The Corps has proposals for ecological improvements of the upper reaches of the Upper Mississippi River, and we have proposals for restoration of the Missouri River with dam reforms in the Dakotas and eastern Montana. The question is how to move this agenda forward.

An environmental restoration agenda for the Corps and a meaningful partnership with Environmental Defense has to start somewhere. Putting together a comprehensive restoration program for the Mississippi Delta is in both of our interests. It should be our first, major demonstration project to show what our partnership can do. It has to be done right. That restoration agenda, however, would be much more robust and our partnership much more meaningful if we could take on other issues in the Mississippi Basin, some of which have been mentioned here. A willingness to consider reliance on more natural hydrologic and ecological processes in locations where the opportunity arises and to do everything we can to make economic models as transparent as possible with independent economic review would constitute further progress. It would symbolize a mutual commitment to map out an expanding and exciting environmental restoration agenda that could galvanize the public and excite the Congress.

**Barrier islands and New York Harbor.** This paper focuses primarily on the scope of an environmental restoration of the Corps in the Mississippi Basin because that is the largest River system in the country by far, it has been subject to extensive Corps hydrologic modifications in the last 100 plus years, it is the centerpiece of the Corps traditional navigation, flood control and agricultural drainage missions, the challenges to achieve hydrologic restoration are huge, and we have an opportunity to demonstrate a productive partnership in putting together and implementing a comprehensive program for Mississippi Delta restoration. If the Corps were to take on a bold new challenge of ecological restoration early in the 21<sup>st</sup> century, this is the critical Basin. However, let me mention two other arenas where we are interacting, one where the relationship is quite productive; the other, less so and complex.

In New York Harbor, through the Dredged Material Management Integration Work Group under the Hudson-Raritan Harbor Estuary Program, the concerned parties, including the Corps, EPA, the Port Authority, the two States and environmentalists have over the last several years been working on an overall strategy that broadly links port development, transportation and environmental restoration goals and activities. The Corps has been authorized under WRDA 2000 to pursue an environmental restoration feasibility study relating to major pieces of this Estuary. Problems in terms of actual implementation abound, and the Corps is facing enormous pressure to grant a permit to fill 200 acres of the Hackensack Meadowlands for a shopping mall. However, there appears to be a willingness to discuss contentious issues and to help move a restoration program forward.

Barrier island management, on the other hand, is an issue fraught with conflict for us, and will in all likelihood become a bigger and more contentious issue for us in the future as we face two counter trends: on the one hand, demographic pressures to develop low-lying coastal areas and barrier islands, and, on the other hand, global warming with its implications for sea level rise and coastal erosional forces. The environmental issue is whether we move sand to maintain dynamic barrier beach, dune and ocean interfaces in place or whether we respect and work with natural processes of erosion, deposition and overwash. The policy issue is whether as a society we should devote increasing sums of federal dollars to encourage people to live in high risk areas as delineated by FEMA or the states in the face of relentless sea level rise or whether we should be using federal resources to facilitate the inevitable property adjustments that dynamic coastal processes will necessitate. A good place to start here in terms of a partnership is to make sure that all of us have confidence in the Corps' ecological assessments and hydrodynamic models. We have a long way to go.

**Conclusion.** The Army Corps has always risen to meet the nation's challenges. Now, the nation needs the Corps' help to meet a new challenge: ensuring that working rivers like the Mississippi also remain living rivers. We urge you to "get the water right" on the Mississippi and America's other greater rivers by restoring and, as equally important, protecting our rivers' hydrologic and geomorphic functions and values. We can meet the needs of nature and navigation, meet the needs of floodplains and farmers, but only if we try, and, in this effort, we can build a truly productive partnership that serves the best of our larger purposes.

